



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Morning Bird Program: Vanity in projects



**Peder A. Berg**  
Deputy Director General  
Norwegian Ministry of Finance  
Norway

Wouldn't it be wonderful, if only once in your life you had access to unlimited funding to realize the project of your dreams? It is perhaps a good thing that few people are bestowed with the privilege. Vanity projects have disturbing features. While costly and conspicuous they produce miniscule benefits, if any at all. The reason is a built-in element of profound dishonesty. The goal is not to produce the purported benefits, but to advance the glory of one person or a group of persons. Thus, vanity projects evolve along a kind of logical path, but one that is different from what the financing party is led to believe. Furthermore, the lack of checks and balances, including a system of good governance, make the vanity projects prone to cost and time overruns or total project collapse.

In some cases the element of vanity is obvious from the start of project planning. In other cases vanity sneaks in through a stream of change orders. In these latter cases it can be a challenge to stop before reaching the brink.

Vanity projects can be found as far back in time as the start of recorded history. It was in fact the preferred way of developing projects for many an autocratic ruler. It is perhaps a little more surprising that we still encounter them today.

In this morning session historical cases will be used to delve further into the properties of vanity projects with the aim of avoiding them for the future.



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## Governing the Front-End of Major Projects

### Updates on project governance in Norway



**Peder A. Berg**  
Deputy Director General  
Norwegian Ministry of Finance  
Norway

In Norway the Cabinet decides on most major projects. As decision support reviews are produced at specific gateways by independent private consultants holding framework contracts with the Ministry of Finance. There are two intervention points:

- Quality Assurance 1 “QA 1” prior to the basic engineering phase. Review topic: The choice of concept. Prime ranking criterion: Net present value (benefits minus costs). Introduced in 2005.
- Quality assurance 2 “QA 2” after completion of the basic engineering phase and before budgetary appropriation. Review topics: Cost, risk, schedule and basis for management. Introduced in 2000.

There is a relatively high threshold value (750 mill. NOK).

A total of over 300 reviews have been made.

A major task for the Concept Research Program is to follow the projects through completion and the subsequent operation. The data thus produced form the basis for ex post evaluations. Evaluation of the concepts chosen at the QA 1 stage entail comparing costs with realized benefits produced during the operational period. As this lies many years ahead, ex post data for the QA 1 assured projects are scant.

For the QA 2 assured projects, data are available for 70 projects that are completed, including the termination report. An assessment of the final cost to budget issue for these projects will be presented.



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### **The petroleum sector in crisis – or business as usual?**

An outline of the current situation and the future prospects of the oil and gas activity at the Norwegian continental shelf. The presentation will also present results from research at the University of Stavanger on cost overruns and productivity in the Norwegian petroleum sector.



**Petter Osmundsen**  
Professor  
University of Stavanger  
Norway



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Updates on project governance in six OECD countries



**Knut Samset**

Professor NTNU and Program Director  
Concept Research Program  
Norway

Governments in many countries are struggling with massive cost overruns and delays in major public sector investment projects. A number of international studies have put this problem under the spotlight, and several countries have introduced governance regimes for such projects.

This presentation compares the Norwegian scheme for quality assurance of major public projects, also referred to as the State Project Model, to similar schemes in five other OECD countries, i.e. Denmark, Sweden, the Netherlands, the UK and Canada (Quebec). The schemes have many features in common – all of them were introduced after the turn of the millennium and place governance responsibility at a high level in the political system. There are also a number of differences, for example with regard to who performs quality assurance, the delineation between technical matters and politics, as well as the scope of such schemes.

The presentation shows that Norway and the Nordic countries have opted for schemes that are fairly simple, with intervention points in the front-end phase only and not during implementation, unlike the other countries.



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### Initiation of Major Projects in BP

This session will introduce the Stage Gate process as used in the Oil and Gas industry and will highlight the potential for adding value in the early stages of a major project with high quality business framing, clear scope definition and focused concept engineering.



**John R Brownridge**  
Appraisal General Manager British  
Petroleum  
UK



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## Governing the Front-End of Major Projects

### Projectification, Innovative Capacity and Flexibility: Macro- and micro level perspectives.



**Andreas Wald**  
Professor  
University of Agder  
Norway

The literature on project management generally assumes an increasing use of projects in all kind of organizations and industries. Although the prevalence of projects in many organizations seems to be evident, no quantification of the degree of projectification on the micro-level of companies but also on the macro-level of the entire economy exist. The quantitative dimension of projectification is complemented by a more qualitative dimension: The use of projects is supposed to make organizations less rigid, more flexible and more innovative.

In my talk I will provide empirical evidence for both, the qualitative and the quantitative dimension of projectification. In the first part, I present the results of a study that, for the very first time, tried to measure projectification on the level of individual organizations, the level of industries, and the level of the entire economy. This study was originally carried out in Germany and more recently replicated in Norway which allows for a comparison of the two countries. The results show that although being different in size and industry structure, in both countries more than 30% of work is carried out in projects and that there will be a further increase of the share of project work in the near future.

In the second part of my presentation I will focus on the qualitative dimension of projectification. I will develop and empirically test a model that includes the degree of projectification as explanatory variable and looks at its effects on the flexibility and innovative capacity of organizations. The findings suggest that the use of projects can in help organizations to flexibly adapt to changes in the environment and to develop innovations.

Keywords: project, projectification, flexibility, innovative capacity



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## Governing the Front-End of Major Projects

### Flexible project management strategies with real options thinking and Scenario Planning



**Maartje van Reedt Dortland**

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The Netherlands

Most large construction projects are characterized by complexity, uncertainty, and a long timespan from planning to execution and finalizing the project. And not to forget the maintenance phase, where new developments might create other demands towards the construction. We developed a decision support tool with real options thinking and scenarioplanning to develop flexible real estate strategies. The tool is developed for real estate projects within healthcare, but is applicable to various types of construction projects. In this presentation I will describe how the tool was developed and how it influenced the participants' sensemaking on future uncertainties. I will conclude with applications of the real options thinking method on large engineering projects in watermanagement.

In the Netherlands in 2008, the healthcare regime changed dramatically which forced healthcare organisations to think and act more strategic to prevent bankruptcy. Among others, they needed to manage their real estate more efficiently. We developed a decision support tool based on the real options theory and scenario planning. A real option is the right and not the obligation to exercise an option. It creates flexibility and therefore adds value to a project. Derived from financial options, a real option applies to real investments, i.e. tangible assets. Both real options 'in' and 'on' the project exist; on the physical construction and in the construction process. An example 'in' the project is the option to grow, which creates flexibility to expand the construction. The option to stage is a process option, created by go/no-go moments within the process. We identified various real options in two in depth case studies of two construction projects in healthcare.

The decisions support tool was tested whether it increased sensemaking on flexible real estate strategies, by means of three workshops in different healthcare organisations. In combination with scenarioplanning the real options approach was recognized as a useful tool to prepare to future uncertainties. We used the backcasting method, in which one reasons back from a desired image of a future situation to identify those changes that are required to create this image. Considering multiple scenarios, flexible strategies with real options can be formulated. The tool proved to offer a useful means to make sense of abstract uncertainties that influence an organization, aspects which are normally outside the scope of real estate managers. The real options approach, as a way of thinking, offered a more structured way of balancing the costs and benefits of strategies to deal with future uncertainties.

Recently, the real options way of thinking has been recognized as a useful tool to support decisionmaking on large water related infrastructure projects in the Netherlands. Considering the many uncertainties around these projects, calculating the value of real options is not realistic, and calculations become too complex. However, the process of thinking about options is sufficient to guide decision makers.



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### Are Real Options sufficiently appreciated in project evaluations?



**Jan Rune Baugstø**

Analysis manager  
Atkins  
Norway

Over the last decade, Real Options have been implemented in the 'daily' project language.

However, many early phase project evaluations are missing out on Real Option discussions:

- Real Options are not evaluated at all
- The basic premises for Real Option value (uncertainty, new information over time, managerial flexibility) are neglected or misunderstood
- The range of Real Option types is not explored and the discussion is on one or a few option types only

In addition, one might ask if Real Option phrases are blurring an agenda of short-time savings or liquidity focus.

This presentation will, based on several early phase project evaluations of large public Norwegian projects, discuss the frequency of the above shortcomings.





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## Governing the Front-End of Major Projects

### The Evolution of the Quebec Governance Framework



**Maude Brunet**  
MSc  
University of Quebec in Montreal  
Canada

The management of large public infrastructure projects is an important issue in Quebec (Canada), with yearly investments averaging 10 billion CAD, about three times more than before 2007. The main objective of the Quebec governance framework is to frame rigorously infrastructure projects, especially in the front-end and in the planning phases. Based on the Norwegian and the United Kingdom experience, the Quebec framework aims at preventing overspending, delays, and managing responsibly the public funds. All major infrastructure projects, defined as over 50 million CAD, and under provincial jurisdiction, have to comply with this governance framework.

From its initial implementation in 2008, the Quebec governance framework was revised in 2010, and again in 2014. Those revisions happened because the actors involved in its implementation have reflected on this experience and learned from the enactment of the framework into projects. Several organizational changes resulted from this ongoing evolution of the framework. Although some researchers have investigated the use of governance framework for public projects, little research has been done in this regard in Quebec, which constitutes an important gap.

The current doctoral research project aims to understand the governance of large public infrastructure projects of Quebec and how it is enacted in practice. A multiple-case study in the Quebec government has been conducted, composed of four cases, each being a major infrastructure project having to comply with the Quebec governance framework for public infrastructure projects. The analysis is undergoing, and will allow us seeing how the governance framework is applied in various situations, what common patterns emerge and what are the distinctive specificities. Moreover, it will help to define more accurately the effectiveness of governance frameworks in practice, and the role of the main actors involved in projects.

This presentation will introduce the Quebec Governance framework and its characteristics: the different project phases, the process of approbation, deliverables, and main actors. Then, the evolution of the governance framework from 2008 to 2016 will be mapped out. Finally, insights into the reasons behind this evolution regarding the context in Quebec and the results of this evolution will be offered.



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### Flexible and frightened - or flexible and fearless?



**Steve Wake**

Chair

Association for Project Management  
United Kingdom

Come and play a game of discussion roulette.

A set of topics randomly presented. Flexibility in action!

It will either be order out of chaos or chaos out of order.

Heroes or nervous wrecks?

Everything is to play for.

In order to achieve deeper insights into flexibility and yourself, topics may include:

- Psychology
- Politics
- Real scope
- Governance
- Getting it right
- Not getting it wrong
- Jokes
- An argument
- The Hero

- Methods
- EVM
- People
- Ethics
- Diversity
- Brexit!
- Audience as a victim!
- Storytelling
- Speaking up



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### Feasibility study of a fixed link across the Oslo fjord



**Anders Jordbakke**

Project manager  
Norwegian Road Administration  
Norway

Around 2 million of Norway's total population of 5 million live near the Oslo Fjord which is considered to be a substantial barrier for transport and regional development. Presently there are two crossings of the Oslo Fjord south of Oslo – a subsea tunnel 20 kilometers from the capital and a ferry service between the relatively small towns of Moss and Horten approximately 40 kilometers further south.

In November 2014 the Public Roads Administration in cooperation with governmental authorities for railways and coastal services presented a report from a front-end analysis of the transport system across the Oslo Fjord. The presentation gives an overview of conclusions and recommendations and discusses some methodological challenges. The report recommends further planning of a fixed road link between Moss and Horten. Here the Oslo Fjord is 5 kilometers wide, and this is obviously a mega project. A tunnel or a bridge may cost 20 – 60 billion NOK (approx. 2 – 6 billion €). The transport directorates conclude that the market for rail travel across the fjord is far too small to make a railway crossing economically viable.

Transport analysis and socio economic assessment indicate that monetized benefits of a fixed road link may be considerably higher than costs. On the other hand a new road for 30 – 40.000 vehicles per day will have adverse effects in sensitive areas with national value when it comes to nature, agriculture and cultural heritage. Thus the front-end analysis has raised massive protests on both sides of the Oslo Fjord.

Many expects a fixed link will generate considerable benefit outside the transport market – so called wider economic impact. This perspective is investigated with a spatial, computable equilibrium model. The result is that wider economic impact seems to be modest compared with other big road projects.



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### The economic case for Crossrail



**Paul Buchanan**  
Partner  
Volterra  
United Kingdom

Crossrail is the UK's largest infrastructure project, although it will be overtaken by High Speed 2 if that goes ahead as planned. This east west tunnel through central London connects two existing commuter lines allowing trains to serve the centre, instead of stopping at terminals on the edge of central London. From the early 70's it was consistently the top ranked rail project in London wide studies, but other smaller/cheaper projects were built first notably the Jubilee Line, the Jubilee Line Extension and the Docklands Light Railway.

I led economic appraisal of Crossrail in 1994, 1997 and then from 2001 to 2008 I was chief economist for Cross London Rail Links (CLRL). The first two were standard transport appraisals comparing the value of the transport user benefits (time savings, comfort, reliability, operating costs) against the capital costs of delivering the scheme, the operating and maintenance costs of running it and the revenues earned from users.

In 2002 we started the development of a new approach to appraisal. That approach was based on what are now known as Wider Economic Benefits (WEBs) which capture the links between employment density and productivity. The role of Crossrail in reducing travel costs still formed a major part of the overall case, but the role of WEBs was made explicit. Crossrail enabled additional growth in central London by adding transport capacity to locations that were otherwise capacity constrained. Further economic gains came from Crossrail linking the Isle of Dogs, City and West End.

The Wider Economic Benefits of Crossrail played particularly well to HM Treasury who suddenly saw real financial returns (additional tax revenues) from investing in transport infrastructure. Crossrail already had a good Benefit:Cost ratio (BCR), but that was not enough to persuade government to invest. WEBs both doubled the economic case and showed additional tax revenues to government. The project opens in 2018/19.



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### Megaprojects - the productivity gap, uncertainty and economic viability



**Alexander Budzier**

Fellow in Management Practices  
Saïd Business School, Oxford  
UK

Megaprojects currently face multifaceted challenges:

- Construction productivity is lacking behind;
- Megaprojects sector is under pressures from changing markets & customers, changing societies & workforces, increased need for sustainability & resilience; and changing politics & regulation; and
- Megaprojects are typically over budget, behind schedule, and under benefits.

The degree of uncertainty of megaproject investments is illustrated by novel research into the Chinese investment boom of recent years, which shows a high rate of troubled assets.

The talk then outlines the causes of the megaproject challenges, i.e. that many megaprojects were a mission impossible from the start and that control and oversight are lacking.

Exploring the root causes behind these the talk finally offers ideas to discuss possible cures.



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## Governing the Front-End of Major Projects

### Major projects - Cost creep from design to decision



**Heidi Ulstein**  
Partner  
Menon Economics  
Norway

Cost increases in the pre-project phase of major investment projects are a phenomenon that is not uncommon. Comprehensive international studies show significant cost overruns in this phase of the projects, and deviations have not become any smaller over the last 70 years.

Documentation from the quality assurance process for four major investment projects for Statsbygg shows that the projects experienced an increase in expected costs of between 46 and 138 percent in the pre-project phase. Does this type of cost development constitute a problem? Is it possible for Statsbygg to curb this type of cost increases? Or are they a natural part of project development, for example due to changing framework conditions?

To answer this question, it is necessary to identify the causes for the cost increases. We developed a method inspired by the methodology used in accident investigation, and categorized the causes into three levels: direct causes, underlying causes and systemic/organizational causes. We carried out a detailed review of the course of events for each of the four projects and attempted to connect cost changes and their likely cause for each level.

Our main conclusion is that it should not come as a surprise that cost estimates increased in the interval between QA1 to QA2 for Campus Ås (relocation of the Norwegian School of Veterinary Science and the Institute of Veterinary Medicine from Adamstuen to Ås), the new National Museum, the rehabilitation of and some new premises for the Norwegian Institute of Public Health, and the National Archives including the Norwegian Health Archives. Systemic causes can explain underlying causes which in turn explain the direct cost drivers. Which causes are most important varies according to the individual projects.

There is one measure in particular we recommend in order to limit cost increases in the interval between QA1 and QA2: a more explicit cost target at an earlier stage in the process. In order to end up with a building that is functional and fulfills needs and requirements, it is also necessary to take into account that requirements and solutions can change during the planning period, by establishing a suitable regime to handle these potential changes. Our recommendations are in line with the new guidelines for purpose-built buildings adopted by the Norwegian government in the spring of this year.



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## Governing the Front-End of Major Projects

### The governance of mega airport construction projects in China



**Dr. Guangshe Jia**  
Professor  
Tongji University  
China

We will introduce the governance of mega airport construction projects in China from three aspects as following:

Firstly, we will introduce the approval procedure of the government for the mega airport construction projects. Specifically including: the classifications of mega airport construction projects; the ways of permission of the Chinese government on mega airport construction projects; The major provisions of the construction permit of different class and permission way; The relevant government departments who control the key points of the construction permit.

Secondly, we will introduce the organization governance of mega airport construction projects in China by analyzing the projects of Shanghai Hongqiao Airport terminal two and Shanghai Hongqiao Transport Hub. These projects have solved the problems of decision-making coordination, schedule coordination, design coordination and construction interface coordination of multi participation subjects in the project implementation stage by using the governance mechanisms called “one conference, three platforms”.

Thirdly, we will introduce a procedure of removal in China by analyzing the projects of Shanghai Hongqiao Airport terminal two and Shanghai Hongqiao Transport Hub. It is an effective way of governance to harmonize contradictions between the people demolished and the projects by sharing the value of the construction of large projects with these people.

Key words: governance, mega airport construction projects in China, construction procedure, coordination



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## Governing the Front-End of Major Projects

### International experience with implementation strategies



**Olav Torp**

Associate professor  
NTNU  
Norway

The choice of implementation strategies in public Norwegian construction projects (roads and railway) have primarily been design-bid-build, with some experiments with design-build and PPP. Recent years there has been an increase in the size of the projects and thereby increasing size of contracts. The Norwegian Public Roads Administration and Norwegian National Railway Administration have introduced new thoughts regarding implementation strategies. Norwegian Public Roads Administration plan to build the new E39 – ferryfree West Coast. As a part of the early planning, Norwegian Public Roads Administration want to identify relevant experiences with relational implementation strategies in relevant countries. NTNU has done a research project, identifying experiences from different countries with different implementation strategies, focusing on relational contracts. Findings from the study of experiences with relational contracts in large infrastructure projects in Northern European countries will be presented.

We found that different variants of relational contracts are used in different countries. However, we found it difficult to spot patterns in factors that dictate choice of variant. We found concepts like Alliancing, Best Value Procurement, PPP, Partnering and Competitive dialogue used. It seems like the choice of variant is dependent on key persons with an idea they believe in. Most countries have experienced both positive and negative outcomes. Negative experiences have in some cases led to the abandoning of tested models. Where one has persisted and “mastered” the model, several countries have demonstrated positive results.





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# Governing the Front-End of Major Projects

### Exploring the Application of the Alliance Delivery Model within UK Rail Infrastructure: A Case Study



**Neill David Carruthers**

Senior Consultant  
PTP Associates Ltd  
UK

Network Rail is one of the UK's largest construction clients. A Government review published in May 2011 identified greater collaboration between industry partners as being an enabler for delivering the need to greater value for money. The infrastructure projects business unit embarked upon a collaborative working change programme to transform its supply chain relationships. A major element of this was the development of collaborative contracting delivery models with a particular focus on the use of the Alliance delivery models.

This session will explore the company's development and implementation of the alliance delivery model including:

- the learning from application of the model in other sectors and countries, primarily Australia;
- identification of the necessary supporting elements for Alliancing to work;
- internal and external stakeholder engagement to secure support; and
- the use of 'pathfinder' projects through which to demonstrate the benefits and learn from experience.

More specifically, the case study will consider the factors that are most likely to suit the use of the alliance delivery model, different variants of alliance agreements that were used during the pathfinder projects and the implications for the procurement and tender evaluation process.

The session will also consider the steps necessary to help build the Alliance organisation and culture including the creation and maintenance of a robust governance framework.



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### Governing the Front-End of Major Projects

#### Let metrics talk and let experts do their job – Experiences with the Best Value Approach



**Wiebe Witteveen**

Partner  
Best Value Group  
The Netherlands

In a world that where information is flowing everywhere, big data show new correlations and transparency is all around us, it is rather surprising that that contract strategies usually hardly use metrics to select vendors and deliver projects. The Best Value Approach is a procurement and project management technology that perfectly fits in the emerging transparency in the world. The Best Value approach is built upon simplicity and metrics. It has helped procurement managers and project managers understand that they should release control of vendors and let experts use their expertise to deliver better, cheaper and faster projects.

Wiebe Witteveen was among the first adopters of Best Value in the Netherlands. He is also (co-)author of two Dutch books on the Best Value Approach and several popular and scientific articles on Best Value. In this track he will cover the why, what and how of the Best Value approach (also known as Best Value Procurement). Wiebe will also address the award-winning application of Best Value in the fast-track program and a case study where engineering services have been procured using Best Value.

Key words: procurement, project management, project front-end



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## Governing the Front-End of Major Projects

### Early Contractor Involvement (ECI) in Norwegian Bridge Projects



Paulos Abebe Wondimu

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Norway

It is widely accepted that contractor involvement in the front end can influence the outcome of the project in a positive way. However, in the traditional project delivery method of construction projects, the design and construction process are separated and sequentially. As a consequence of this, it is difficult to integrate construction knowledge in the front-end of projects. The evolving project methods are designed to remove such typical challenges by involving contractors early in the process. However, the EU public procurement directive represents a challenge for public owners when they consider early contractor involvement (ECI) in their projects.

This session will answer the following questions based on multiple case study and literature review.

- What are the approaches used to implement ECI in Norwegian bridge projects without violating EU public procurement directive?
- What are the success factors for ECI?
- How could the practised approaches be improved?

In this session seventeen approaches of ECI identified from literature as well as twelve approaches of ECI identified during case study will be explained. In addition six success factors of ECI identified from interviewees will be presented. The session will also reflect on the potential of the each of the practiced approaches of ECI and gives recommendation for improvement in future implementation of them.

Keywords - Early contractor involvement, approaches of ECI, Success factors, Public owner, public procurement.



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## Governing the Front-End of Major Projects

### The contract strategy at Ringeriksbanen



**Stein Berntsen**  
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Dovre Group Consulting AS  
Norway

Ringeriksbanen is a 30 billion NOK railway project between Hønefoss and Sandvika, aimed at reducing the travelling time between Oslo and Bergen, the two largest cities in Norway, by one hour, and joining the area of Ringerike into the greater Oslo working region. There is also a motorway project being planned between Hønefoss and Sandvika. Two main contract strategy directions needed to be decided upon was:

Would it be beneficial to combine the railway and the motorway projects into one project with common project management, considering potential cost savings and execution risk?

Would it be beneficial to use contract models with early involvement of the entrepreneurs, like private-public-partnership or similar contract models, for a combined project or a separate railway project?

Dovre Group and the Institute of Transport Economics presented the results of an analysis covering these questions and others to the Ministry of Transportation and Ministry of Finance in 2015. This presentation highlights the framework and assessments made related to the above two main directions for the contract strategy.

Keywords: Economies of scale, Risk Management, Private Public Partnership, Contract Strategy



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## Governing the Front-End of Major Projects

### The trade-off between private and public funding of transport infrastructure



**Svein Bråthen**

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Molde University College  
Norway

Toll financing in Norway has a long tradition and is today an integrated part of the total financing of national and county roads. Local initiatives form the basis for planning and approval of toll road projects. The process with political commitment on several levels is probably one of the reasons for the relatively broad political consensus on the use of tolls.

However, road tolls can be more expensive than public funding through taxes, and there are trade-offs related to both the share of toll financing, the length of the toll collection period and the level of tolls. This is a complex issue and the net effects may vary according to the characteristics of each project.

In this study, transport models are used to predict the generated traffic by those who live in a given area; which destinations that are chosen; which means of transport that are being used; and finally the routes that are used to get there. For each of the areas we have statistical information about the number and types of jobs, and an overview of age, gender, car ownership and a travel patterns for different population groups. The information contained in the models gives a good starting point to calculate the road users' reaction to tolls, and hence the society's gains and losses from such measures.

The study concludes as follows: High tolls in projects with relatively low traffic reduce the socio-economic profitability, compared with public funding. In some projects, there may be "thresholds" in the market that should be considered before any tolls are set. Such thresholds may be linked to choice of route and probably also to potential induced traffic. In such cases, tolls that are only marginally too high can reduce the socio-economic profitability significantly.

There may be significant distributional effects between the toll projects and operators in adjacent transport networks, which should be paid attention to in the appraisals. For example, diverted traffic could affect adjacent toll projects and ferry services.

Tolls may be desirable to public funding in projects with high traffic levels and low toll rates, especially where there are tendencies to congestion in or around the project. In such cases, the toll may also have a positive traffic regulating effect.



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### Agency costs in the privatization of social infrastructure financing



**Espen Solheim-Kile**

MSc  
University of Agder  
Norway

The privatization of financing in Public-Private Partnerships (PPPs) has been subject to considerable public debate. However, little research attention has been paid to the question whether private financing is always the best option. Using insights from agency theory, this study aims to develop our theoretical understanding of PPP financing. The following research question is investigated: How does the choice of financing (private, public or mixed) affect agency costs in Public-Private Partnerships? A comparative case study approach comprising four Norwegian construction projects with different financial configurations is undertaken. Norway is an interesting context for understanding the mechanisms of financing in public procurement, as the access to public funding is substantial. The findings suggest that the private sector is risk averse in these projects, increasing the agency costs. This risk aversion stems from a combination of factors, primarily bank risk aversion, long-term equity constraints, limitations on decision rights and exogenous factors. Furthermore, adverse effects of private finance include a disincentive for cost reduction as the most important factor contributing to the bids competitiveness is debt rate. From the cases studied, a range of incentives motivates the contractors. Consequently, a comprehensive and holistic understanding of incentives in Public-Private Partnerships is needed in order to best evaluate financing options. The decision should be evaluated on a project-by-project basis, and should not be considered a necessary mechanism of all PPPs.

Keywords: Public-Private Partnership, Incentives, Principal-Agent Theory, Privatization



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## Governing the Front-End of Major Projects

### Financial uncertainty of the Fehmarn Belt fixed link



**Hans Schjær-Jacobsen**  
Senior Consultant  
RD&I Consulting  
Denmark

The Fehmarn Belt fixed link project conditionally approved by the Danish parliament on 28 April 2015 is supposed to be built and commercially operated by a Danish state owned company and financed by loans guaranteed by the Danish government. The loans are going to be amortized by incomes from the tunnel users. According to original plans construction work was supposed to start by 2016 followed by tunnel inauguration in 2022 but this has been put on hold awaiting clarification of major uncertainty issues, such as lack of environmental approval by the German authorities. Never the less, contracts have been signed with major building consortia concerning tunnel works, implicating payment of stand-by fees until construction start-up and step-out fees in case of no German approval.

Since the official financial model is publically unavailable the uncertainty profiles presented in this paper are based on a financial model developed by the author covering 60 years of tunnel operation and validated in terms of project payback period within an absolute accuracy of  $\pm 1$  year compared to published results generated by the official model. Such features as length of construction period, construction costs and reserves, maintenance costs, subsidies by EU, road and rail traffic volumes and rates, inflation, nominal and real interest rates, depreciation, VAT, and joint taxation with Sund & Bælt Holding A/S are included. Uncertainty is represented and calculated by probabilistic uncertainty representation and Monte Carlo simulation as well as interval analysis. The resulting project uncertainty profiles are presented in terms of a traffic light metaphor: Green light corresponds to a payback period less than 40 years, yellow to 40-50 years, and red to larger than 50 years.

It turns out that the fixed link project constitutes a high risk business case and the likelihood of financial project failure in terms of the payback period being outside of the green light zone is substantially larger then acknowledged by the project proponents and presented to the public. This is primarily due to apparently too optimistic base case assumptions of critical, but uncertain, project variables and methodologically insufficient partial sensitivity analyses.

The presentation will also cover a number of actions taken by the Ministry of Transport and Building since the parliament's approval in attempts to justify initial project assumptions that have been seriously challenged by external criticism.



## Concept Symposium 2016

### Governing the Front-End of Major Projects

#### **The impact of government failure on the selection and implementation of privately financed infrastructure projects.**



**Mark S. Hellowell**

Senior Lecturer  
University of Edinburgh  
United Kingdom

Theoretical research on public–private partnerships has emphasised their ability to address well-understood agency problems in the delivery of public infrastructure projects. Despite this, there is a substantial body of empirical research which documents the tendency of such projects, across multiple jurisdictions, to generate budgetary problems for the government authorities involved and/or affordability problems for service users. This paper seeks to explore how and why these problems occur. It shows how features of the project finance approach, when underpinned by regularly deployed forms of state guarantee, can encourage and facilitate strategic behaviour by government employees during economic appraisals, and draws on documented examples to explore how this: (i) undermines the quality of investment decisions, such that projects are approved that compromise the ability of governments to meet other socially valuable objectives; and (ii) gives rise to contractual structures that clearly fail to minimise the long-run costs to the government and/or service users. The paper suggests that economic appraisal processes need to be strengthened to take account of these issues.





# Concept Symposium 2016

## Governing the Front-End of Major Projects

### New energy solutions in Statoil



**Stein Trygve Briskeby**

Principle Engineer  
Statoil ASA  
Norway

Climate change and a growing demand for clean energy are opening up new business opportunities. The total primary energy demand is foreseen to grow by up to 35% to 2040, and a great portion of this is expected to be within the electricity sector. Renewable sources of electricity, in particular wind and solar, are expected to grow significantly in importance, delivering between 6 and 17 times more electricity in 2040 compared to 2013.

By establishing the New Energy Solutions (NES) unit in 2015, Statoil is focusing on establishing a position in markets where the company has natural advantages, particularly within offshore renewable energy. NES' mandate is to build a profitable renewables business and develop new lower-carbon business opportunities for Statoil's core products.

Statoil's current portfolio in offshore wind has a generating capacity of more than 1100 MW with, and further 4800 MW of consented projects. The company is continuously exploring new opportunities in North-West Europe, Japan and USA.

Earlier this year Statoil launched a new venture capital fund, Statoil Energy Ventures, dedicated to investing in attractive and ambitious growth companies in renewable energy, supporting its strategy of growth in new energy solutions. The fund will invest up to USD 200 million over a period of four to seven years.



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Sustainability and Performance for Government Programs in the Digital Environment



**Stephen Hayes**

CEO  
StrategyDotZero  
Australia

In the current global environment there is continuing downward pressure on available funds for government program expenditure. This has a direct impact on the options for social policy and national infrastructure investment.

Against this backdrop, many governments still struggle with disconnected performance frameworks and governance systems coupled with an inability to effectively translate well-intended strategy into outcomes. A significant contribution to this situation are stove-piped business planning, capability planning, portfolio prioritisation and performance, enterprise and portfolio risk, and benefits tracking functions. Significant improvements to governance and performance are required if governments are to ensure sustainable investment levels. Governments' current embrace of the digital transformation agenda provides one path to sustainability.

This presentation will examine a range of the issues contributing to poor program failure and performance including findings from the Australian Government's Shergold Report - "Learning from Failure: why large government policy initiatives have gone so badly wrong in the past and how the chances of success in the future can be improved". The presentation will offer an integrated model for breaking down stove-piped functions and provide an overview of an enterprise solution currently being implemented in parts of the Australian Federal Government that looks at the opportunity to improve performance in the digital environment.



## Concept Symposium 2016

# Governing the Front-End of Major Projects

### Environmental considerations when selecting public investment projects



**Merete Saugestad**

MSc  
BI Norwegian Business School  
Norway

The world is currently facing serious global and potentially irreversible environmental challenges. Major public investment projects will often have a long lifetime, and can potentially lead to significant climatic and environmental impacts. It is therefore important that climatic and environmental concerns are addressed systematically and satisfactorily in the methodology used for selecting and implementing such projects. I have investigated how the world's major climatic and environmental challenges are considered in the Norwegian governmental project model. I have focused on the concept evaluation phase, and particularly the cost-benefit model that is an important decision basis when ensuring that appropriate projects are selected. The analysis has shown that environmental considerations are partly included in the Norwegian governmental project model. However, the concept evaluation and the cost-benefit model do not address the world's major climatic and environmental challenges satisfactorily. Defining characteristics of the environmental issues challenge the methodology used in the concept evaluation.

The main reason for this is that neither the cost-benefit analysis, nor other methodological tools in the concept evaluation take into account that the Earth has a finite capacity to absorb pollution and waste or produce resources. Furthermore, it is assumed that various forms of capital such as natural capital and financial capital are fully interchangeable, which is often not the case. Based on these findings, I have proposed several potential changes to the Norwegian governmental project model, in order to strengthen it with respect to climatic and environmental concerns. The recommended option is to include a high-level, strategic environmental analysis as part of the decision base for the concept evaluation. I have suggested a framework for a model that could be useful for such an environmental analysis. The main parameters in the model are the world's major environmental challenges combined with the main life cycle phases of the investment project.



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Aspects of sustainability – New harbour in Kirkenes



**Elin Kverneggen**  
Head of department  
Project Advisory and Analysis  
Holte Consulting  
Norway

The world is turning its attention towards the Arctic, which is a region of significant and increasing geopolitical importance. Kirkenes has a strategic position in this focus, having a harbour to the Barents sea, and being located by the border between Russia and Norway, close to the northern border of Finland. A concept study on relocating and expanding the harbour and improving the transport route E6 in the Kirkenes area has been performed. This concept study has dealt with a number of different aspects of sustainability; economical, environmental and cultural.

The economical sustainability in the Kirkenes area may be improved if a new harbour is established to serve the increasing number of commercial ships sailing through the Northeast Passage, increased petroleum activities in the Barents sea, and possible railway transport from Finland. On the other hand, intervention with the reindeer grazing areas around Kirkenes may have a negative effect on the economic and cultural sustainability of the traditional herding.

The environmental sustainability may have a positive effect of an optimised global transport. However, petroleum activities may contribute to further climate changes, and harbour activities may represent a threat to local flora and fauna.

To what extent should aspects of sustainability be included in the choice of concept?



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Ex ante and ex post evaluation – making use of evaluation results



**Knut Samset**

Professor NTNU and Program Director  
Concept Research Program  
Norway

Project evaluation is commonly undertaken during the implementation period, or ex post, i.e. some times after the project is finalized. This presentation takes a look beyond more traditional evaluation activities to focus primarily on ex ante evaluation. i.e. up front of project proposals or investment cases. One conclusion is that the appraisal of an investment case or a project at the earliest time should apply essentially the same evaluation criteria that will be used ex post after the project is completed. This will strengthen the basis for planning and decision making early on and increase the likelihood of a successful project outcome.

However, the object of an ex ante evaluation may differ from what is finally decided. This will be the result of subsequent analysis, assessment, negotiation, positioning, and the exercise of power. These are complex processes with one thing in common: they make the outcome difficult to predict. The complexity is illustrated and discussed with reference to an empirical study that takes a closer look at the processes that occur in the idea- and decision phase.



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Learning across hospital projects by a shared evaluation agency



**Kari Gro Johanson**

Project Director  
Helse Stavanger HF/Sykehusbygg HF  
Norway

Until the Ministry of Health and Care Services (HOD) established the Norwegian Hospital Construction Agency (Sykehusbygg HF) late 2014, most new-builds/hospital projects in Norway were executed by the project owner's organization (i.e. the Hospital). Planning and constructing of a new regional/local hospital is considered a "once in a lifetime" project for the hospital in charge, and the required hospital project expertise is normally not available with the project owner's organization. (Although exceptions exist).

Before 2015, most hospitals executed their projects by contracting expertise from the consultancy market. Several private agencies with in-depth knowledge and width-expertise on hospital projects have over the years acted as the main experience transfer arena. By establishing Sykehusbygg HF, the ambition of HOD is to evaluate hospital projects across Norway for better projects and increased standardization. Each single hospital project will benefit from learnings and experiences from new-build hospitals, in Norway and abroad.

Pitfalls: Sykehusbygg HF should avoid being too bureaucratic, too rigid and too conservative, preventing innovation to take place. Also, Sykehusbygg HF needs to maintain the collaboration with the consultancy market both for resources and for knowledge sharing. The main focus for Sykehusbygg HF should be towards project development in the early phase rather than the execution phase.

Keywords: evaluation across hospital projects, experience transfer, collaboration with the consultancy market



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Towards an Optimal Evaluation System



**Jarle Haarstad**  
Senior partner  
Scanteam  
Norway

The scope of the Concept evaluations is in line with approaches of the OECD/DAC and its member countries. In many aid programs, collection of background/baseline data, project planning, monitoring and evaluation are intertwined in a Result Based Management Approach. An issue intriguing for me is the match between the current KS Project Design Documents, the two stages of quality assurance and the Concept evaluation system. I wonder especially whether the intended beneficiaries are clearly identified and their situation taken stock of before and after the intervention.

I have in some cases noted a discrepancy between the scope of projects almost solely focused on infrastructure and issues of their use and utility (e.g. Halden Prison, Svalbard Research Park and Remmen Building), but also noted the evaluation recommendation that the initial use of the infrastructure/facility have not been elaborated. This raises the issue of the project designs and also the timing of the evaluations.

I would like to learn more about the use and utility of Concept evaluations by the specific authorities and other stakeholders. I have found the synthesized reports on lessons on various parts of the transportation sector actively communicated. It still seems worthwhile to dwell on links back to public and private stakeholders.

During recent years many aid donors have been concerned with the relatively high number of poor quality evaluations being prepared, and have initiated "Evaluability Assessments", addressing the extent to which an activity or project can be evaluated in a reliable and credible fashion, given the data availability and the systems able to provide for data. In this session I propose that we especially discuss the possible use of evaluability assessments in Concept projects.



## Concept Symposium 2016

# Governing the Front-End of Major Projects

### Dutch politicians' use of cost-benefit analysis



**Niek Mouter**

Postdoctoral researcher  
Delft University of Technology  
The Netherlands

28 Dutch politicians and 10 top-level civil servants were interviewed about the way Dutch politicians use cost-benefit analysis (CBA). Various types of use were identified. Politicians use CBA: (1) When forming their opinion about the desirability of transport projects; (2) As political ammunition (opportunistic use); (3) To make themselves and their decisions look more rational (symbolic use). None of the politicians stated that they solely base their judgment on CBAs. Politicians mention seven barriers that hamper the use of CBA when forming their opinion: (1) The process of forming an opinion is trivial; (2) Politicians prefer to form their opinion based on conversations rather than on reading reports; (3) Politicians don't trust CBA's impartiality; (4) Politicians disagree with normative choices made in CBA. An example of such a normative choice is that CBA attaches an equally large weight to everybody's utility changes. (5) Politicians think that CBA's explanatory power is limited; (6) Politicians receive CBAs too late; (7) When there is plenty of money, politicians care less about a project's social profitability. Members of Parliament identified barriers 3 and 6 as the most important barriers. They regard publishing CBAs one or two months before a debate as the most auspicious solution for rectifying these barriers. An interesting observation is that no barriers for the opportunistic and symbolic use of CBA by politicians were identified. Hence, it can be concluded that it is highly likely that when politicians receive CBAs for transport projects, they will use the CBA in an opportunistic and symbolic way, but politicians will not necessarily use CBA when forming their opinion.

The paper is open access published online in Transportation (DOI 10.1007/s11116-016-9697-3).





# Concept Symposium 2016

## Governing the Front-End of Major Projects

### The probable, the uncertain, and the hypothetical: Problems of assessment and communication



**Karl Halvor Teigen**

Professor emeritus University of Oslo and  
Adjunct research scientist Simula Research  
Laboratory  
Norway

Inexact estimates of future outcomes and past events can be communicated in a variety of ways: Numerically, as probabilities or as uncertainty (confidence) intervals, and verbally, in words or phrases denoting likelihoods and doubts. We discuss in this paper some general issues and problems with both kinds of estimates for assessors, communicators and recipients of the communication, illustrated by current research within the psychology of judgment and decision making.

- Subjective probability estimates of multiple outcomes do not add up to 100%, and are often assessed by a simple proximity heuristic, sometimes making hypothetical outcomes (what could have happened, but did not) more imaginable and likely in retrospect
- Subjective uncertainty intervals are typically too narrow, and appear insensitive to the degree of confidence required
- Revised forecasts are perceived as trends that will continue into the future
- Single bound ranges (“more than 5 mill”, “less than 10 percent chance”) imply qualitative messages in addition to the quantities involved (e.g., opinions, recommendations, and the existence of trends)
- Verbal phrases are of two kinds: Positive (possible, a chance) or negative (not certain, unlikely). They are directional, by asking recipients to consider either the occurrence or the non-occurrence of a target outcome.
- Communicators regularly use the modal verb can to describe extreme (top) outcomes, regardless of their probabilities. However, such estimates are often perceived by recipients to denote expected rather than extreme values, leading to exaggerated claims.

These judgmental aspects of words and numbers are often neglected, but should be taken into account in all stages of project management.

Keywords: Subjective probability estimates; Uncertainty intervals; Verbal probabilities; Communication



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Governing major public sector projects in the United Kingdom



**Timothy Augustus Banfield**  
Consultant  
The Nichols Group  
UK

Organisations – whether commercial or, particularly, in the public sector – and consumers are setting ever more aspirational requirements to deliver new or changed capabilities and outcomes. Projects are the link between these strategic or policy objectives and successful delivery of the anticipated benefits. The range of projects is broadening in ways we might never have envisaged twenty years ago, diversifying from traditional capital intensive infrastructure to embrace broader societal and organizational change. As such there is no such thing as a “simple” or standard project. Traditional project management methods and competencies have not kept pace with these developments and are now too often commodities rather than offering bespoke approaches to enable consistently successful delivery.

In his presentation Tim will use recent UK government delivery experiences and initiatives as a backdrop to explore four characteristics which may help to define project delivery in future: what success looks like; how capabilities and approaches need to be transformed to recognize the diversity of delivery challenges, how to grow the right experience and environment and, finally, what being an ethical professional may mean in future.



# Concept Symposium 2016

## Governing the Front-End of Major Projects

### Summary remarks and closing statement

The Concept Symposium 2016 is coming to an end, and we hope you have all appreciated the presentations, discussions, the people and the venue. As the final speaker the Concept research director will summarize and close the conference.



**Gro Holst Volden**  
Research Director  
Concept Research Program  
Norway